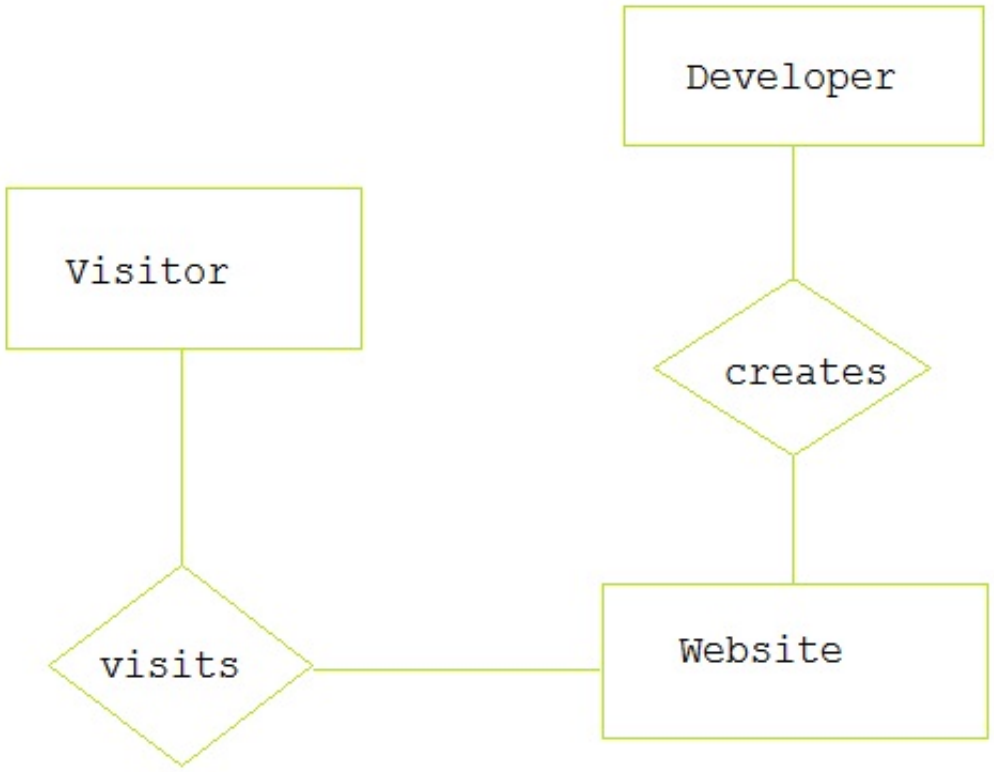
E-R Diagram

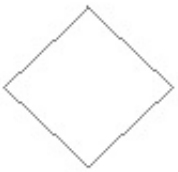
ER-Diagram is a visual representation of data that describes how data is related to each other.



Symbols and Notations

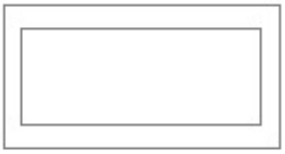
represents

Entity

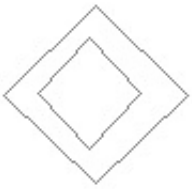


relationship

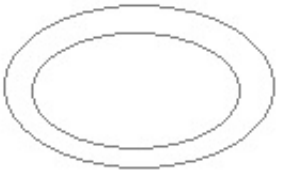
attribute



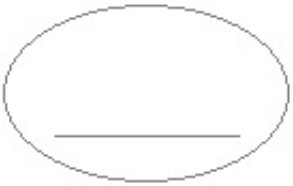
weak entity



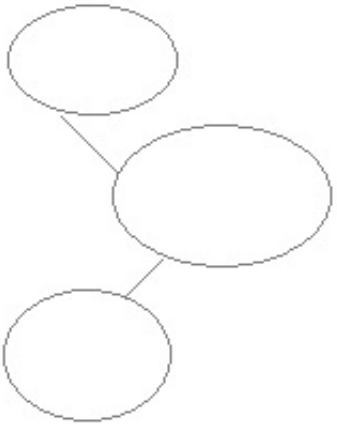
weak entity
relationship



Multivalued
atribute



Key attribute



Composite
attribute

Components of E-R Diagram

The E-R diagram has three main components.

1) Entity

An **Entity** can be any object, place, person or class. In E-R Diagram, an **entity** is represented using rectangles. Consider an example of an Organisation. Employee, Manager, Department, Product and many more can be taken as entities from an Organisation.

Weak Entity

Weak entity is an entity that depends on another entity. Weak entity doen't have key attribute of their own. Double rectangle represents weak entity.

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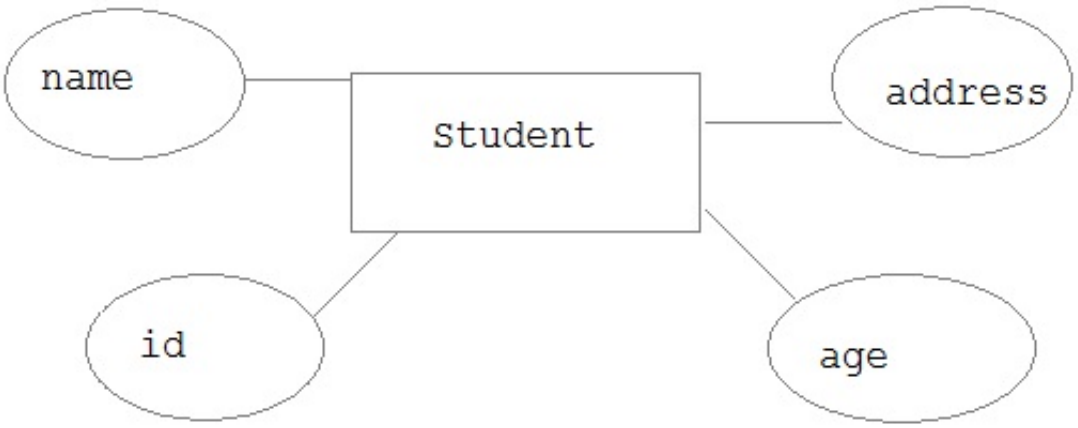
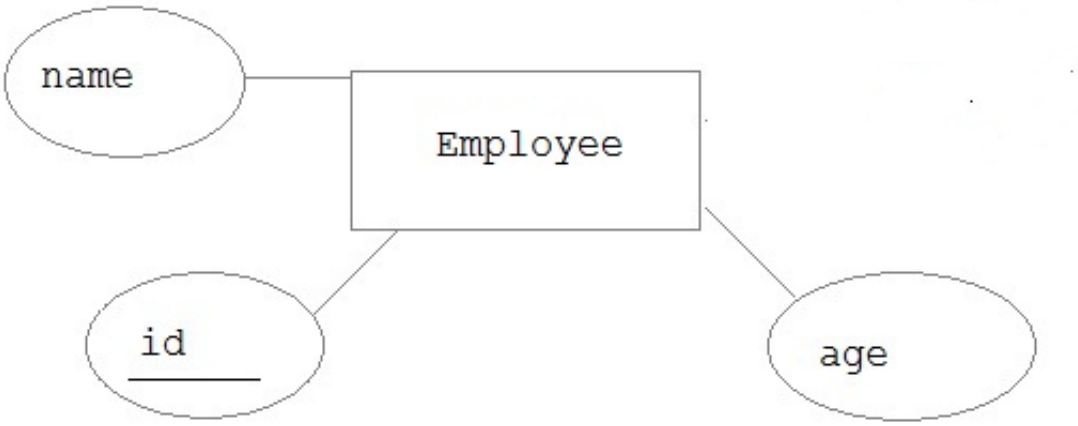
2) Attribute

An **Attribute** describes a property or characterstic of an entity. For example, Name, Age, Address etc can be attributes of a Student. An attribute is represented using eclipse.



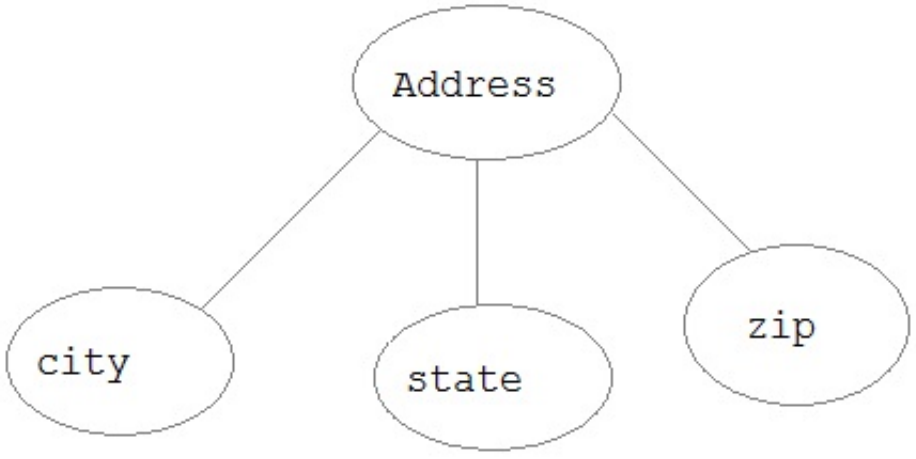
Key Attribute

Key attribute represents the main characterstic of an Entity. It is used to represent Primary key. Ellipse with underlying lines represent Key Attribute.



Composite Attribute

An attribute can also have their own attributes. These attributes are known as **Composite** attribute.



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3) Relationship

A Relationship describes relations between **entities**. Relationship is represented using diamonds.

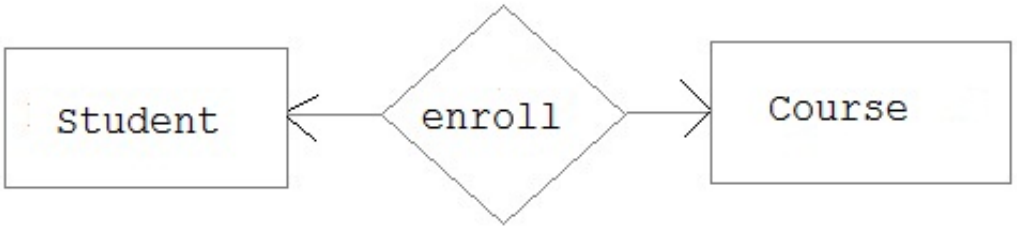
There are three types of relationship that exist between Entities.

- Binary Relationship
- Recursive Relationship
- Ternary Relationship

Binary Relationship

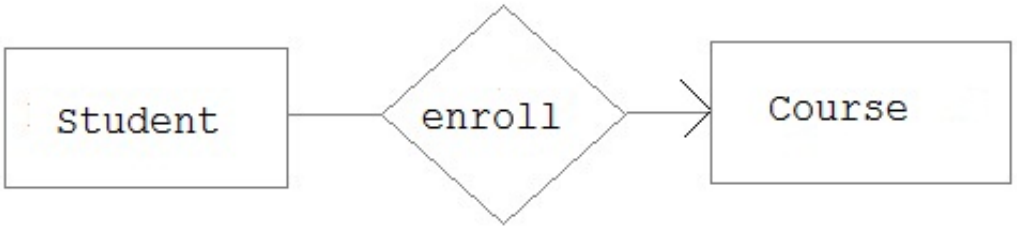
Binary Relationship means relation between two Entities. This is further divided into three types.

1. **One to One :** This type of relationship is rarely seen in real world.



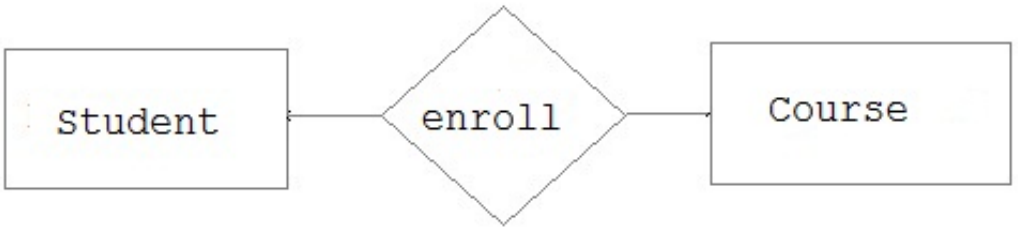
   The above example describes that one student can enroll only for one course and a course will also have only one Student. This is not what you will usually see in relationship.

2. **One to Many :** It reflects business rule that one entity is associated with many number of same entity. For example, Student enrolls for only one Course but a Course can have many Students.



   The arrows in the diagram describes that one student can enroll for only one course.

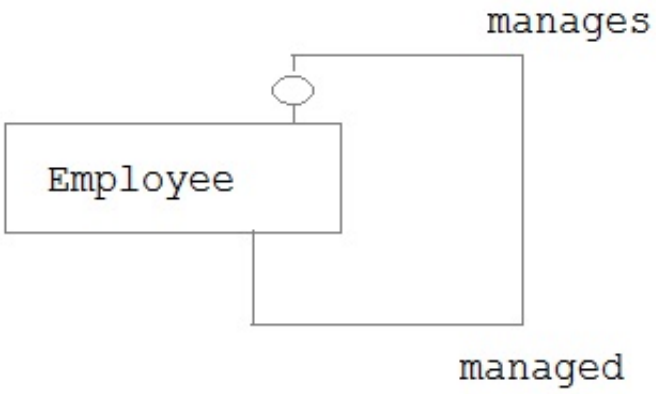
3. **Many to Many :**



The above diagram represents that many students can enroll for more than one courses.

Recursive Relationship

When an Entity is related with itself it is known as **Recursive** Relationship.



Ternary Relationship

Relationship of degree three is called Ternary relationship.